Abstract

Annatto extract composition (AEC), including cis and trans geranyl geraniols (GG) and tocopherol-free C-5 unsubstituted tocotrienols (T3), increases the *de novo* synthesis of intermediate isoprenoid and distal protein products, including endogenous coenzyme Q10 (CoQ10), dolichols (DL) and all subsequent GG-prenylated and DL-glycosylated proteins, including GG-porphyrinated hemes. This intermediate and distal product replenishment by AEC reverses maladies of myotoxicity (of both drug and non-drug origins), including maladies that affect the muscle, kidney, eye, GI tract and skin, nerve, blood, and CoQ10-related syndromes of energetics and LDL protection. AEC anabolically increases the endogenous *de novo* CoQ10 synthesis via GG elongation/prenylation of side-chain and conversely CoQ10 catabolically increases the endogenous *de novo* GG synthesis via beta-oxidation of CoQ10. Also, such AEC decreases *de novo* synthesis and disposal of triglycerides (TG) in humans via PPAR activation and SREBP deactivation. Such drop in TG by AEC reverses maladies of insulin resistance (IR) and metabolic syndrome (MS), prediabetes, diabetes and diabetes-related cardiovascular diseases (CVD). GG activates PPAR and down regulates SREBP transcription factors. This AEC, containing GG, inhibits cancer growth whether or not GG involvement in protein prenylation is required.